

Fig. 1.

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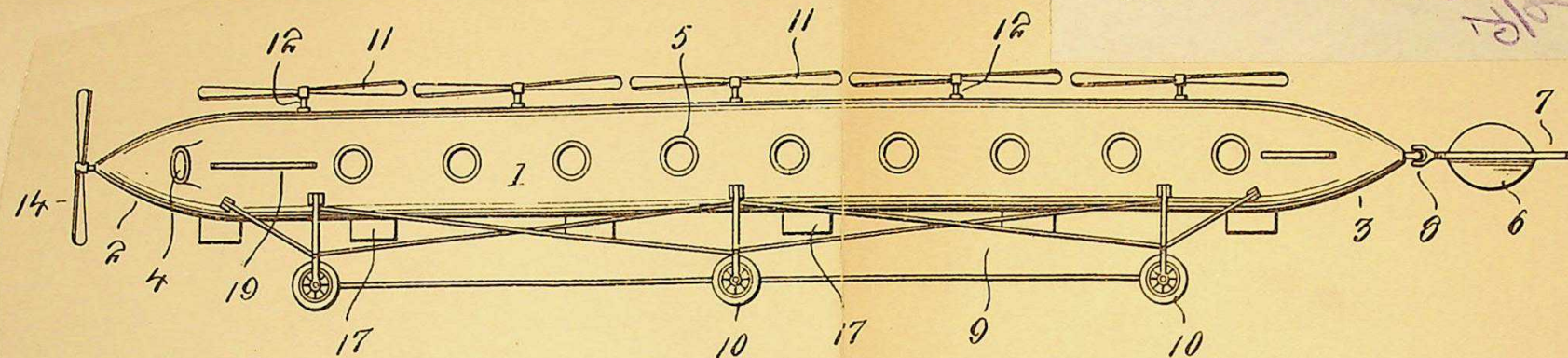


Fig. 2.

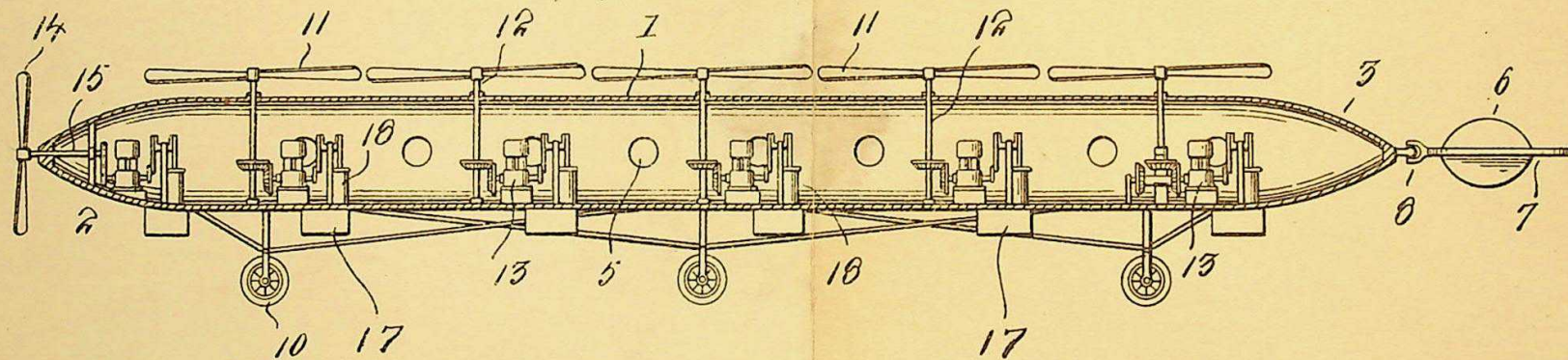


Fig. 3.

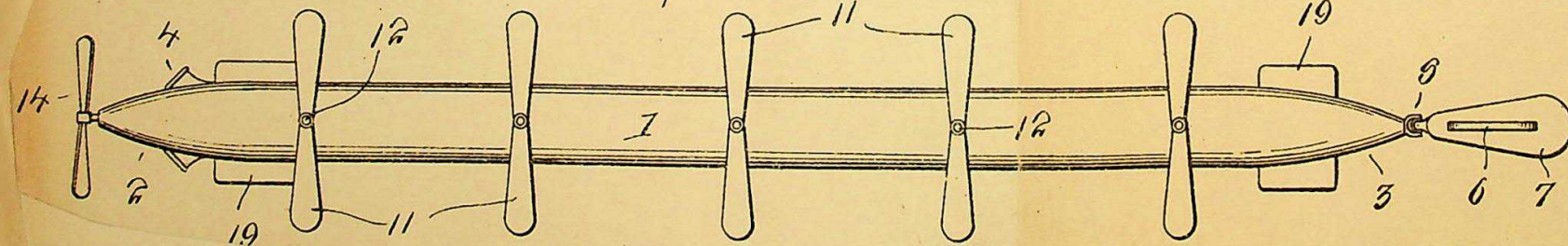
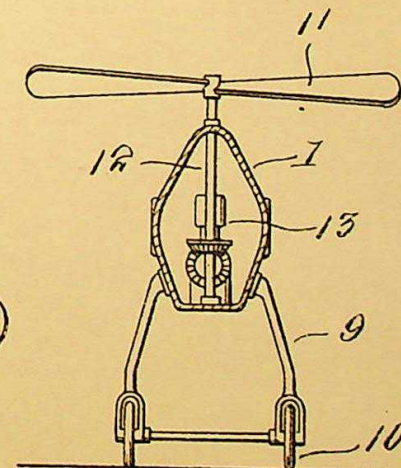


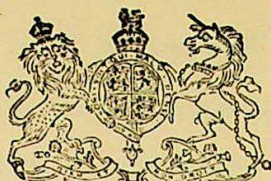
Fig. 4.



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COMPLETE SPECIFICATION.

DUPLICATE

Improvements in and relating to Flying Machines.

I, CARL EMIL RITTER, of Petaluma, County of Sonoma, State of California, United States of America, Gentleman, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

5 This invention relates to flying machine, and particularly to air craft of that kind adapted to be driven and sustained through the action of suitably arranged propellers, whereby the use of a gas field or ordinary supporting planes may be dispensed with.

10 The object of the invention is to provide an air ship which is capable of being driven at high speed, of ascending directly from the ground without a preliminary running motion, and of being readily and conveniently controlled in flight without the necessity of employing a complex steering apparatus.

A further object of the invention is to provide a novel system and arrangement of driving and sustaining propellers, whereby efficiency of propulsion and
15 sustension is ensured.

The invention consists of the features of construction, combination and arrangement of parts, hereinafter fully described and claimed, reference being had to the accompanying drawings, in which:—

Figure 1 is a view in side elevation of an air ship embodying my invention.

20 Figure 2 is a vertical longitudinal section of the same.

Figure 3 is a top plan view.

Figure 4 is a vertical transverse section.

Referring to the drawings, 1 designates the body of the air ship, which comprises an elongated tube, tapered substantially to a point at its bow and stern
25 ends 2 and 3. This tubular body may be made of any suitable material, and is preferably of truncated diamond-form in cross section. As shown particularly in Figure 4, the body is widest at its transverse line and has its sides tapering convergently toward its bottom and top. The bottom and top surfaces of the body are preferably flattened, the top surface being of less width than the
30 bottom surface. This cross sectional shape of the body adapts it to be driven through the air with a minimum degree of resistance.

The body is provided at the front with observation openings 4 for the use of the pilot, and may be formed in each of its sides with any desired number of port holes or windows 5. The interior of the body may be sub-divided into any
35 desired number of compartments for the storage of freight, accommodation of passengers, and the housing of the motors and the like.

Arranged at the stern 3 is a rudder or steering plane having a vertical surface 6 and a horizontal surface 7. This rudder is connected with the stern by a suitable universal joint 8 to adapt it to be moved vertically to steer the
40 ship in a vertical plane and laterally to steer the ship horizontally. Any ordinary or suitable connections for controlling the rudder from an operating device arranged at or near the bow of the ship may be employed.

The body 1 is mounted upon a frame or sub-structure 9 carrying wheels 10 which are designed to support the ship when on the ground, to enable it to be
45 shifted along the surface of the ground, and to adapt it to land without shocks or jars. These wheels may be cushioned in any suitable manner.

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Arranged in a longitudinal series above the top of the body 1, in close proximity thereto, are lifting and sustaining propellers 11, each of which is mounted on a vertical shaft 12 driven by an independent motor 13. These propellers are disposed to act in close proximity, so as to serve the purpose of rotating planes, which operate to sustain the ship in the air, and by variations in the speed of which the lifting and sustaining power may be regulated. The propellers are preferably made of some considerable length in order to have maximum sweep, and may alternately throughout the series revolve in opposite directions to prevent any tendency to lateral deflection of the ship in flight liable to ensue if all the propellers were driven in the same direction.

Arranged at the bow 2 is a driving propeller 14 mounted on a horizontal shaft 15 driven by a motor 16, which is preferably of higher power than the motors 13 in order that a high driving thrust action of the propeller 14 may be obtained to propel the ship with considerable speed through the air while it is being sustained by the propellers 11. Each propeller is preferably independently supplied with gasoline or other liquid fuel from a tank or reservoir 17 upon the under side of the body or adjacent portion of the frame 9, from which reservoir the liquid fuel is supplied to the motor through a suitable construction of compressed air forced feed mechanism 18, provided with controlling valves which regulate the supply of air to the reservoir and the flow of fuel from the reservoir to the motor. The pump or force feed device of the force feed mechanism may derive power from the motor 13 or 16 which it serves.

In starting flight, the propellers 11 are set into action at high speed to raise the ship from the ground to the desired elevation. When the desired elevation is reached, the speed of the propellers 11 is diminished to exert only a supporting effect. The driving propeller 14 is set into action to propel the ship forward. The direction of the ship in flight may be controlled by means of the rudder, and the speed regulated by varying the speed of the propeller 14. When it is desired to descend the speed of the propellers 11 may be further diminished and the rudder turned to point the bow end of the ship downward, while the propeller 14 continues to operate at normal speed, whereby a quick descent may be effected, or by increasing the speed of the propellers 11 and stopping the propeller 14 the ship may be allowed to slowly descend to the ground. By arranging the lifting propellers so as to operate in a plane parallel with and close to the upper surface of the body 1, the propellers operate to break up side gusts or air and thus tend to steady the ship in flight, such arrangement of the propellers also obviating the use of upright supporting structures liable to render the ship top heavy or to present surfaces against which cross currents of air may strike to distribute the lateral equilibrium.

The motors are arranged below the longitudinal transverse center of the ship to make the center of gravity as low as possible, and the fuel feed tanks are similarly arranged so that the greater portion of the weight of the entire load will be disposed at such a point as to secure a large amount of inherent lateral and longitudinal stability. The body 1 may be provided with the usual fins 19 to prevent vertical deflection of the ship from its course.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim, is:—

1. A flying machine comprising an elongated tubular body of substantially frusto-diamond form in cross section, a driving propeller at the forward end of the body, a direction rudder at the rear end of the body, and a longitudinal series of lifting and sustaining propellers mounted upon the top of the body and in close proximity thereto.

2. A flying machine comprising an elongated tubular body extending lengthwise in the line of flight, a horizontal shaft at the forward end of the body, a vertical rotatable driving propeller mounted on said shaft, a direction rudder at

Ritter's Improvements in and relating to Flying Machines.

5 the rear end of the body, vertical shafts extending upwardly from the interior of the body through the top of said body, a longitudinal series of horizontally rotatable lifting and sustaining propellers mounted upon the upper end of said shafts, close to the upper surface of the body, independent motors within the body for driving the horizontal and vertical shafts, fuel storage tanks arranged below the level of the motors, and force feed means for feeding fuel therefrom to the motors.

Dated this 13th day of February, 1911.

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Cominatus